

REMARKS

Applicant has amended claim 1 and has added new claims 4-12 to more particularly and distinctly point out the claimed refrigerating machine oil, and round out the coverage to which Applicant is entitled. Applicant has cancelled claim 3. The claim amendments are supported by the original claims and the as-filed specification, e.g., at paragraphs [0022]-[0024], [0027], [0029], [0047], [0048], and [0054]. No new matter has been introduced.

§ 103 REJECTIONS OF CLAIMS 1 AND 3

Applicant respectfully traverses the 35 U.S.C. § 103(a) rejection of claim 1 over U.S. Patent No. 6,736,991 to Cohen et al. ("Cohen") and the 35 U.S.C. § 103(a) rejection of claim 3 over Cohen in view of U.S. Patent No. 6,231,782 to Shimomura et al. ("Shimomura") for at least the following reasons. The cancellation of claim 3 obviates the rejection of claim 3.

Cohen teaches away from amended claim 1

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. M.P.E.P. § 2141.02 (VI). A prior art reference that "teaches away" from the claimed invention is a significant factor to be considered in determining obviousness. M.P.E.P. § 2145(X)(D). "When the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious." *KSR Intern. Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007).

Amended claim 1 recites, among other things, that "[a] phosphorus-based additive other than . . . phosphorothionate is at least one phosphorus compound

selected from phosphoric acid esters, acidic phosphoric acid esters, amine salts of acidic phosphoric acid esters, chlorinated phosphoric acid esters, and phosphorous acid esters.”

Cohen does not teach or suggest the above-quoted features of amended claim 1. Cohen instead teaches away from the above features. Specifically, Cohen discloses that “extreme pressure additives based on chlorine or sulfur compounds, or acid phosphate esters are not suitable because they are too labile and thermal stability is insufficient.” Cohen, col. 7, lines 7-11. Because Cohen expressly teaches that acid phosphate esters are not suitable, one of ordinary skill in the art, having considered Cohen, would not have had any reason to use the above-listed phosphorous compound containing chlorine or acid phosphate esters in a refrigerating machine oil composition. Shimomura does not also disclose or suggest any reason to modify Cohen to use the above-listed phosphorous compound containing chlorine or acid phosphate esters.

A reasonable expectation of success is required

A reasonable expectation of success is required to support a conclusion of obviousness. M.P.E.P. § 2143.02. In order to have a reasonable expectation of success, at least some degree of predictability is required. M.P.E.P. § 2143.02(II).

As discussed above, Cohen, by teaching away from using the recited acid phosphate ester, presents no predictability that the claimed refrigerating machine oil would succeed.

Unexpected beneficial results that were not predicted in Cohen

Furthermore, the claimed invention shows the unexpected beneficial results that were not predicted in Cohen, as evidenced by the Declaration of Yuji SHIMOMURA

under 37 C.F.R. § 1.132 ("Rule 132 Declaration") filed with the November 16, 2009
Reply to Office Action, as set forth below.

"When considering whether proffered evidence is commensurate in scope with the claimed invention, Office personnel should not require the applicant to show unexpected results over the entire range of properties possessed by a chemical compound or composition." M.P.E.P. § 2145. Although Applicant submits that the claims prior to the amendment already were commensurate in scope with Examples 1 and 2 of the as-file specification, solely to advance prosecution, Applicant has added new claim 8 to incorporate subject matter of claim 1 prior to amendment, plus a recitation of a kinematic viscosity range.

The present application, e.g., paragraph [0014], discloses that with the claimed refrigerating machine oil, high levels of lubricity, stability, and miscibility with refrigerants are attained, with a good balance between these." For instance, Examples 1 and 2 in the present application, which are commensurate with the scope of claim 7, demonstrate high levels of both stability and miscibility.

Cohen discloses naphthenic mineral oils substantially similar to Base Oil 4 of Shimomura, by a comparison of Table 1 on col. 3 of Cohen to the table on page 3 of the Rule 132 Declaration. In the Rule 132 Declaration in the table on page 3, and in the discussion on pages 4-5, Base oil 4 of Shimomura, in which the sulfur amount is beyond the claimed range, has inferior stability properties, such as low stability at 200 °C and inferior anti-wear property, compared to Examples 1 and 2 in the present application. Because Cohen's naphthenic mineral oils substantially correspond to Base Oil 4 of the Rule 132 Declaration, one of ordinary skill in the art also would not have reasonably expected successful results in both stability and miscibility from Cohen's mineral oils.

Moreover, Cohen neither discloses nor suggests achieving both high stability and superior miscibility from its mineral oils.

In addition, the Office Action at pages 5-6 asserted that “comparative example 2 from Table 1 in the present specification shows comparable and in many tests better results than example oils 1 and 2.” Comparative Example 2 shows a failing color rating indicated as an inferior stability, and thus fails to show a good balance between the stability and miscibility, one of the intended purposes of the claimed invention.

Accordingly, one of ordinary skill in the art, having considered Cohen, would not have had any reason to modify Cohen to adjust a sulfur amount to no more than 75 ppm, nor would have considered such modification as one of a finite number of solutions with a reasonable expectation of success similar to what is obtained by the claimed refrigerating machine oil. See M.P.E.P. § 2143(E).

Shimomura also fails to disclose or suggest the features of claims 1 and 8 missing from Cohen, e.g., adjusting a sulfur amount to no more than 75 ppm in Cohen, and fails to predict the above-discussed beneficial results therefrom.

Cohen fails to disclose or suggest all of the features of claims 1 and 8

The Office Action at page 3 asserted that Cohen allegedly discloses sulfur content of 0.05% (500 ppm) or lower (Cohen, col. 2, line 66-col. 3, line 16), and further asserted that Cohen teaches all of the elements of claim 1. Applicant respectfully agrees for at least the following reasons.

As discussed above, Cohen discloses the naphthenic mineral oils listed in Table 1, which have respective sulfur contents of 200 ppm and 300 ppm, substantially similar to Base Oil 4 of Shimomura. Moreover, in both examples, the sulfur contents are below

500 ppm, but are much higher than the upper end point of the claimed range, i.e., 75 ppm, and thus do not overlap with the claimed range of no more than 75 ppm. The range of 200 ppm-300 ppm is not sufficiently close to “no more than 75 ppm,” that one skilled in the art would have expected Cohen’s lubricants to have the same properties as lubricants having a sulfur content of no more than 75 ppm. See M.P.E.P. § 2144.05.

The Rule 132 Declaration further corroborates that Cohen neither discloses nor suggests claims 1 and 8. In the previous November 16, 2009 Reply, Applicant demonstrated that Base Oil 4 in the Rule 132 Declaration fails to disclose or suggest claim 1, which also is acknowledged in the Office Action, page 4. As discussed above, both examples in Table 1 of Cohen have similar %C_A and sulfur content to Base Oil 4. Therefore, one of ordinary skill in the art would recognize that if the disclosed sulfur content in these two examples of Cohen, which are substantially similar to Base Oil 4, was decreased to be within the claimed range of sulfur content, its percentage of aromatic ring structures (%C_A) would be also decreased below the claimed %C_A range (i.e., 8 to 15 %).

Accordingly, Cohen’s naphthenic mineral oils fail to disclose or suggest the claimed refrigerating machine oil “wherein a percentage of aromatic ring structure (%C_A) in [a] mineral oil is from 8 to 15; and a sulfur content in the mineral oil is no more than 75 ppm by mass,” as recited in claims 1 and 8.

For at least the foregoing reasons, amended claim 1 and new claim 8 are allowable over the cited references.

New claims 4-7 depend from claim 1 and incorporate all of the features of amended claim 1. Claims 4-7 also are allowable over Cohen.

New claims 9-12 depend from claim 8, and incorporate all of the elements of claim 7. Claims 9-12 therefore are allowable over the cited references for at least the same reasons as claim 8.

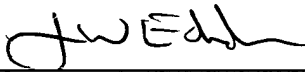
In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application, withdrawal of the rejections, and timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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